AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An image sensing apparatus using an image sensing element~~, comprising~~ which has a plurality of pixels arrayed in horizontal and vertical directions, wherein:

~~a setting device which sets, in one image signal output from the image sensing element, a signal from a predetermined pixel region, a first reference signal for DC recovery, and a second reference signal;~~

~~a first correction device which DC recovers the signal from the predetermined pixel region for each row on the basis of the first reference signal set by said setting device; and~~

~~a second correction device which uniformly DC recovers signals from the predetermined pixel region on the basis of the second reference signal set by said setting device~~

the image sensing element includes an effective pixel area which outputs signal of an object image, a first reference pixel area which outputs a first reference signal for DC signal recovery, and a second reference pixel area which outputs a second reference signal for DC signal recovery,

wherein a pixel in the first reference pixel area is shielded from light and does not have a photoelectric conversion element, and

wherein a pixel in the second reference pixel area is shielded from light and has a photo-electric conversion element and outputs a signal including dark current component generated in the photoelectric conversion element,

said image sensing apparatus comprising:

a first correction unit adapted to DC recovery signals of the effective pixel area based on the first reference signal with respect to each corresponding horizontal line; and

a second correction unit adapted to DC recovery signals of the effective pixel area while evenly subtracting a representative value based on the second reference signal from each signal of a plurality of horizontal lines of the effective pixel area.

Claim 2 (original): The apparatus according to claim 1, wherein

the first reference signal includes a signal free from influence of a signal converted by a photoelectric conversion element of the image sensing element, and

the second reference signal includes a signal containing a dark current component generated in the photoelectric conversion element of the image sensing element.

Claim 3 (original): The apparatus according to claim 2, wherein the second reference signal includes a signal obtained in a region which includes the photoelectric conversion element in the image sensing element and is shielded from incident light.

Claim 4 (original): The apparatus according to claim 3, wherein the first reference signal includes a signal obtained in a region which does not include the photoelectric conversion element in the image sensing element.

Claim 5 (original): The apparatus according to claim 3, wherein the first reference signal includes a signal output from a reference power supply for each row of the predetermined pixel region.

Claim 6 (currently amended): The apparatus according to claim 1, wherein said second correction ~~device~~ unit has a storage device which stores the signal from the ~~predetermined~~ effective pixel ~~region~~ area, a calculation device which calculates a representative value of the second reference signal, and a subtraction device which subtracts the representative value of the second reference signal that is calculated by the calculation device, from the signal from the ~~predetermined~~ effective pixel ~~region~~ area that is stored in the storage device.

Claim 7 (currently amended): The apparatus according to claim [[3]] 6, wherein the calculation device has a calculation device which calculates representative values of the second reference signal for a plurality of regions obtained by dividing the region which includes the photoelectric conversion element in the image sensing element and is shielded from incident light, and a device which outputs to the subtraction device a lowest value among the representative values of the plurality of regions that are calculated by the calculation device.

Claim 8 (original): The apparatus according to claim 6, wherein the representative value includes any one of an average value, a median, and a mode.

Claim 9 (currently amended): An image sensing apparatus comprising:

a photoelectric conversion region which includes two-dimensionally arrayed photoelectric conversion elements;

a first correction ~~device~~ unit which corrects a signal from the photoelectric conversion region on the basis of a first reference signal common to each line; and

a second correction ~~device~~ unit which corrects the signal from the photoelectric conversion region on the basis of a second reference signal common to signals from the two-dimensionally arrayed photoelectric conversion elements,

wherein the first reference signal includes a signal free from influence of a signal generated by the photoelectric conversion element, and the second reference signal contains a dark current component generated in the photoelectric conversion element.

Claim 10 (original): The apparatus according to claim 9, wherein the second reference signal includes a signal from a photoelectric conversion element which is shielded from light in the photoelectric conversion region.